CLAIMS

1. A power transmission chain including: a plurality of links having front and back insertion parts through which pins are inserted; and a plurality of first pins and a plurality of second pins for connecting the links aligned in a chain width direction so as to be bendable in a longitudinal direction such that a front insertion part of one link and a back insertion part of another link correspond to each other, in which a first pin fixed to a front insertion part of one link and movably fitted in a back insertion part of another link and a second pin movably fitted in the front insertion part of the one link and fixed to the back insertion part of the other link move relatively in a rolling and contacting manner so as to enable bending in a longitudinal direction between the links, wherein

at least two kinds of sets of pins are provided in which loci of rolling contact movement of the first pin and the second pin are different, and the sets of pins are aligned randomly.

2. The power transmission chain as claimed in claim 1, wherein

two or more kinds of links having different pitches

are formed, and the links are aligned randomly.

3. The power transmission chain as claimed in claim 1 or 2, wherein

a locus of the rolling contact movement is an involute curve of a circle whose basic circle radius is Rb obtained by

$x=Rb\cdot(\sin\gamma-\gamma\cdot\cos\gamma)$, and

$y=Rb\cdot(\cos\gamma+\gamma\cdot\sin\gamma)-Rb$,

where a contact position of the first pin and the second pin in a chain linear part is an origin, a chain linear direction is an x axis, a direction orthogonal thereto is a y axis, and an angle defined by a pin tangential direction with respect to the y axis at a contact position of the first pin and the second pin in a chain curved part is γ.

4. The power transmission chain as claimed in claim 3, wherein

the following relationships are established:

$Rb=k\cdot R$, and

$0.25<k<2r$,

where, when used as a chain for a CVT, a minimum radius of the chain curved part is R, and a transmission ratio of the CVT is r.

5. The power transmission chain as claimed in claim 1 or 2, wherein

a locus of the rolling contact movement is a non-involute curve in a range between an involute curve of a circle of an allowable lower limit and an involute curve of a circle of an allowable upper limit,

the allowable lower limit being obtained by

$$x=0.25R\cdot(\sin\gamma-\gamma\cdot\cos\gamma),\ \text{and}$$

$$y=0.25R\cdot(\cos\gamma+\gamma\cdot\sin\gamma)-0.25R,$$

the allowable upper limit being obtained by

$$x=2r\cdot R\cdot(\sin\gamma-\gamma\cdot\cos\gamma),\ \text{and}$$

$$y=2r\cdot R\cdot(\cos\gamma+\gamma\cdot\sin\gamma)-2r\cdot R,$$

where a contact position of the first pin and the second pin in a chain linear part is an origin, a chain linear direction is an x axis, a direction orthogonal thereto is a y axis, an angle defined by a pin tangential direction with respect to the y axis at a contact position of the first pin and the second pin in a chain curved part is γ, a minimum radius of the chain curved part when used as a chain for a CVT is R, and a transmission ratio of the CVT is r.

6. The power transmission chain as claimed in claim 2, wherein

a locus of a contact position of the first pin and the second pin is an involute of a circle, and a basic circle radius of an involute of a link having a large pitch is larger than a basic circle radius of an involute of a link having a small pitch.

7. A power transmission chain including: a plurality of links having front and back insertion parts through which pins are inserted; and a plurality of first pins and a plurality of second pins for connecting the links aligned in a chain width direction so as to be bendable in a longitudinal direction such that a front insertion part of one link and a back insertion part of another link correspond to each other, in which a first pin fixed to a front insertion part of one link and movably fitted in a back insertion part of another link and a second pin movably fitted in the front insertion part of the one link and fixed to the back insertion part of the other link move in a rolling and contacting manner relatively so as to enable bending in a longitudinal direction between the links, wherein

a locus of a contact position of the first pin and the second pin is an involute of a circle, and [basic circle radius of involute]/[height of pin]=5 to 20.

8. The power transmission chain as claimed in any one of claims 3 to 6, wherein

[basic circle radius of involute]/[height of pin]=5 to 20.

9. A power transmission device comprising:

a first pulley having a sheave face in a conical surface shape;

a second pulley having a sheave face in a conical surface shape; and

a power transmission chain provided over the first pulley and the second pulley, wherein

the power transmission chain is one according to any of claims 1 to 8.